Final Report

COLLISION BETWEEN

HAFNIA NILE AND CERES I

AT SOUTH CHINA SEA

ON 19 JULY 2024

TIB/MAI/CAS.173

Transport Safety Investigation Bureau
Ministry of Transport
Singapore

28 December 2025

The Transport Safety Investigation Bureau of Singapore

The Transport Safety Investigation Bureau (TSIB) is the air, marine and rail accidents and incidents investigation authority in Singapore. Its mission is to promote transport safety through the conduct of independent investigations into air, marine and rail accidents and incidents.

TSIB conducts marine safety investigations in accordance with the Singapore Transport Safety Investigations Act 2018, Transport Safety Investigations (Marine Occurrences) Regulations 2023 and the Casualty Investigation Code under SOLAS Regulation XI-1/6 adopted by the International Maritime Organization (IMO) Resolution MSC 255(84).

The sole objective of TSIB's marine safety investigations is the prevention of marine accidents and incidents. The safety investigations do not seek to apportion blame or liability. Accordingly, TSIB reports should not be used to assign blame or determine liability.

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ABBREVIATIONS

AIS	Automatic Identification System
ARPA	Automatic Radar Plotting Aid
ASD	Able Seafarer Deck
BML	Bridge Manning Level
BRM	Bridge Resource Management
BTM	Bridge Team Management
CCR	Cargo Control Room
CM	Chief Mate
CI	Ceres I
COLREGs	International Regulations for Preventing Collisions at Sea
COT	Cargo Oil Tank
CPA	Closest Point of Approach
DOC	Document of Compliance
DSC	Digital Selective Calling
ECDIS	Electronic Chart Display and Information System
HFOT	Heavy Fuel Oil Tank
HN	Hafnia Nile
ICB	International Classification Bureau
IMO	International Maritime Organisation
ISM	International Safety Management
LRS	Lloyds Register of Shipping
MLC	Marine Labour Convention
MMD	Malaysia Marine Department

MSA	Maritime Safety Administration
MSMD	Minimum Safe Manning Document
MT	Metric Tonnes
nm	Nautical mile
OOW	Officer of the watch
PMDS	Panama Maritime Documentation Services
SMC	Safety Management Certificate
SMS	Safety Management System
STCW	Standards of Training, Certification, and Watchkeeping for Seafarers
TCPA	Time to Closest Point of Approach
VDR	Voyage Data Recorder
VLSFO	Very Low Sulphur Fuel Oil
VTIS	Vessel Traffic Information System
2M	Second Mate
3M	Third Mate

SYNOPSIS

On 19 July 2024, at about 0602H, a collision occurred between the Singapore-registered oil/chemical tanker Hafnia Nile (HN) and the São Tomé and Príncipe-registered tanker Ceres I (CI) in the South China Sea, east of Malaysia. HN was underway on a northeast-bound passage and CI was at anchor. The prevailing conditions were fair weather with good visibility, fresh winds of 15 to 25 knots, and a north-westerly current of 2 to 4 knots.

The collision caused structural damage to both ships and resulted in the loss of bunker fuel and naphtha cargo from one of HN's cargo tanks, leading to a fire onboard both ships. Two shore workers onboard CI sustained serious burn injuries, and one later died in hospital.

The Transport Safety Investigation Bureau classified the occurrence as a very serious marine casualty.

The investigation revealed the following:

- The collision occurred when HN attempted to navigate between CI and another southwest-bound ship that were approximately 0.7 nautical miles apart. During the approach, the Officer of the Watch (HN-2M) was in the chartroom at the aft end of the wheelhouse, preparing two reports. The chartroom was separated by curtains during the hours of darkness. An Able Seafarer Deck (HN-ASD2) was alone in the wheelhouse.

- HN's S-band radar CPA/TCPA alarms were silenced, the X-band radar alarms were deactivated, which removed an important safeguard for early detection of a reducing CPA.

- HN-2M joined the ship in Singapore after overnight travel from Colombo, Sri Lanka, with a transit in Kuala Lumpur. Upon boarding HN at noon, HN-2M immediately commenced taking-over Second Mate duties and was involved in port activities while the ship was at anchor. When he eventually went for his rest, he had only about two hours of rest over a 38.5-hour period, as his rest was disrupted by an unannounced fire alarm test. He then commenced the 0000-0600 watch, and the collision occurred during the last hour of this watch. HN-2M was likely tired from overnight travel, the workload upon joining, and disrupted rest prior to assuming the midnight watch.

- CI's bridge team detected HN at a range of 6.4 nautical miles away but initially assessed the risk as low. Visual and sound signals were reportedly used to warn HN, however, no VHF communication was attempted by CI's bridge to alert HN when the situation escalated to close quarters.

- CI's SMS lacked specific guidance regarding the methods to be used to communicate with an approaching ship during a close-quarters situation at anchor.

- An incidental observation revealed that the Bridge Manning Level (BML) of HN did not meet the HN-Company SMS requirement of BML 5 during departure from Singapore and BML 4 while transiting the Singapore Traffic Separation Scheme (TSS). The BML at the time of the allision met the HN-Company SMS requirement.

VIEW OF SHIPS

Hafnia Nile (*Source:* HN-Company)

Ceres I (*Source*: CI-Company)

DETAILS OF SHIPS

Name	Hafnia Nile (*HN*)
IMO number	9766217
Flag registry	Singapore
Classification society[1]	Lloyds Register (LR)
Recognise Organisation issuing SMC and DOC certificate	Lloyds Register (LR)
Ship type	Oil tanker
Year built (Keel laid[2])	December 2015
Company / Operator	BW Fleet Management Pte. Ltd.
Gross tonnage[3]	43072
Length overall	228.00m
Breadth	32.24m
Designed draft (Summer)	14.35m
Summer freeboard	6.565m
Main engine(s)	STX MAN B&W 6G60ME-C9.5, 11230 kW @79.0 RPM.
Propellers	Four-blade, right-handed
Remarks	At the time of the collision, *HN* had a mean draft of 11.33m, carrying 51,243 metric tonnes of Naphtha. All 12 cargo oil tanks, except slop tanks, were loaded to 85% capacity.

Table 1

[1] LR was the Recognised Organisation for carrying out surveys and issuance of statutory certificates, ISM related SMC for HN and DOC for the Company.
[2] For compliance of relevant maritime regulations, such as SOLAS (Safety of Life at Sea) and MARPOL (Marine Pollution), there are different requirements based on the ship's keel laid date. Ships built after certain dates may be subject to stricter safety, environmental, or construction standards.
[3] Gross Tonnage is calculated by measuring the total internal volume of a ship's enclosed spaces, like cargo holds and crew areas. This measurement helps to determine what safety standards regulations apply to the ship.

Name	Ceres I (*CI*)
IMO number	9229439
Flag registry	Sao Tome and Principe
Classification society	Panama Maritime Documentation Services (PMDS)
Recognised Organisation issuing DOC certificate	International Classification Bureau (ICB Class)
Ship type	Oil tanker
Year built (Keel Laid)	October 2000
Owner/ Company / Operator	Ceres Shipping Limited
Gross tonnage	160229
Length overall	329.95m
Breadth	60.00m
Designed draft (Summer)	21.26m
Summer freeboard	9.08m
Main engine(s)	MITSUI - MAN B&W 8S80MC 29,121 kW @79.0 RPM.
Propellers	Four-blade, right-handed
Remarks	At the time of the collision, *CI* was in ballast condition and had a mean draft of about 8.99m.

Table 2

1 FACTUAL INFORMATION

Unless otherwise stated, all times used in this report are expressed in Ship's Mean Time (SMT), which is eight hours (H) ahead of Coordinated Universal Time (UTC).

The investigation team reviewed the voyage data recorder (VDR), supporting documents, and crew statements from Hafnia Nile (HN). Interviews were conducted with relevant personnel to verify the information provided.

The VDR for Ceres I (CI) was not available. The investigation team acknowledges the assistance of the Malaysian Marine Department in obtaining documents and information from CI's crew.

1.1 Narrative by Hafnia Nile's crew (HN-Crew)

1.1.1 Pre-collision events

1.1.1.1 On 18 July 2024, HN arrived in Singapore for bunkers, stores and provisions, crew change[4] and Class Annual Safety Surveys. At approximately 2300H, the Third Mate (HN-3M), acting as the Officer of the Watch (HN-OOW), tested all navigational equipment, the main engine telegraph, and manual steering, all of which were found operational. Shortly after midnight, HN-3M handed over[5] the bridge watch to the Second Mate (HN-2M) and proceeded to the deck to prepare for the arrival of the pilot from PSA Marine (Pilot).

1.1.1.2 On 19 July 2024, at approximately 0030H, the Pilot boarded HN. After completing the Master-Pilot Exchange Checklist, HN-3M proceeded forward to prepare the anchor[6] for heaving. The Master (HN-Master) and HN-2M remained on the bridge to oversee the departure.

1.1.1.3 HN-Master informed the investigation team that it was customary for the Chief Mate (HN-CM) not to take the first navigational watch after departure, as HN-CM would usually rest following extended port duties. He also stated that the bridge team had implemented double-up watches, a manning arrangement in

[4] Crew change was completed for the following personnel: HN-2M, Fourth Engineer, Engine Cadet, HN-ASD1 and the Messman.
[5] HN-2M informed the investigation team that HN-Master instructed HN-3M to proceed on deck before a proper handover of watchkeeping responsibilities could be completed, and the handover checklist was not carried out.
[6] HN was anchored at Eastern Petroleum Alpha Anchorage.

which a Senior Officer (HN-Master[7] or HN-CM) stood watch together with an OOW (HN-2M or HN-3M) on a 6-hourly rotation to meet the Company's requirement for one Senior Officer, one OOW, and one lookout during the transit through the TSS from One Fathom Bank, in the Straits of Malacca to Horsburgh Lighthouse in the Singapore Straits.

1.1.1.4 HN-Master further added that the HN-CM[8] had been engaged in inspection, survey and servicing activities, and had informed the Master of being tired and intending to rest after dinner. In view of this, HN-Master intended to allow HN-CM a longer rest period[9] and scheduled HN-CM to assume watch duty at 1600H on 19 July 2024.

1.1.1.5 In accordance with the passage plan[10], the bridge team comprised the Pilot, HN-Master, HN-2M and the duty Able Seafarer Deck (HN-ASD1) who was assigned to perform hand steering, together with Ordinary Seaman (HN-OS) assigned as the lookout. This composition initially met the Company's SMS requirement for Bridge Manning Level 5 (BML 5) for departure out of Singapore.

1.1.1.6 During the early departure stage, HN-OS was sent to the main deck to assist with re-rigging of the pilot ladder on the lee side, as requested by the Pilot. The absence of HN-OS from the bridge reduced the BML to 4. At approximately 0118H, the anchor was heaved. The ship's navigational lights were turned on, and the automatic identification system (AIS) status was updated to "Underway using engine," with destination and estimated time of arrival (ETA) to Japan entered.

1.1.1.7 Three vertical green lights[11] were displayed to indicate HN's intention to cross the westbound lane of the Singapore Straits Traffic Separation Scheme (TSS). The Pilot notified the Vessel Traffic Information Service (VTIS) Central of HN's intended route prior to his disembarkation.

1.1.1.8 After clearing the anchorage area and with the Pilot disembarked at about

[7] Double watch arrangement: HN-Master stood watch from 0000H–0600H and 1200H–1800H, while HN-CM stood watch from 0600H–1200H and 1800H–2400H.
[8] HN-CM had been scheduled to assist with anchor heaving during the planned departure around midnight.
[9] HN-CM told HN-Master during dinner at about 2000H that she was feeling very tired and had taken a pain killer tablet as her body was aching and that she was going for rest.
[10] According to HN-Master, the passage plan had been reviewed by him, as the voyage was from Spain (4 June 2024) to Japan (end July 2024) with a scheduled stop-over in Singapore.
[11] As recommended by MPA's Port Marine Circular No.04 of 2013 – Recommendatory measure for ships crossing the TSS and precautionary areas in the Singapore Strait during the hours of darkness.

0124H, HN-Master assumed conning responsibility, assisted by HN-2M and HN-ASD1. HN-Master reported to VTIS Central via VHF Channel 14 his intention to cross the westbound lane before joining the eastbound lane of the TSS and proceeded to adjust HN's course and speed.

1.1.1.9 Once HN had settled on the eastbound lane with no traffic of concern, HN-Master instructed HN-ASD1 to put the wheel on auto-steering and commence lookout duty. At this stage, the bridge was operating at BML 3, consisting of the HN-Master, HN-2M (OOW), and HN-ASD1 as the lookout. HN-3M was also instructed to stand down from the forward station.

1.1.1.10 Thereafter, HN-OS, after securing the pilot ladder, returned to the bridge and, after adjusting his vision to the dark, noted that HN-ASD1 was performing the lookout duty with the ship on auto-steering. HN-OS approached HN-ASD1 to take over the lookout duty but was told he was not needed and could stand down. HN-OS then left the bridge to rest. At about 0145H, HN-3M arrived at the bridge after securing the forward station. Following a discussion with HN-2M, it was agreed that HN-3M would be called at around 0600H, after which HN-3M left the bridge at about 0200H.

1.1.1.11 At approximately 0210H, HN entered Sector 9[12], HN-2M made the required position report to VTIS East on VHF Channel 10. The ship's speed increased gradually from slow ahead to full ahead. The transit through the eastbound lane was uneventful, with good weather and visibility of about 10 to 12 nautical miles (nm).

1.1.1.12 As this was HN-2M's first OOW duty during the ship's underway passage after joining at about noon time the day before (18 July 2024), according to HN-Master, he reminded HN-2M of the importance of maintaining minimum closest point of approach (CPA[13]) of 1.5nm, where practicable[14]. HN-Master also advised HN-2M to remain vigilant and to notify him immediately if uncertain about any developing situation.

1.1.1.13 HN-Master and HN-2M jointly reviewed the upcoming waypoints, focussing on potential navigational hazards as the route turned northerly. HN-Master was

[12] Sector 9 refers to the VTIS East reporting sector, entered when a ship crosses Longitude 104° 02.1'E in accordance with the Singapore Strait Reporting System.
[13] CPA is the shortest distance between two ships if they continue on their current courses and speeds. It helps to assess if there would be a risk of collision.
[14] According to HN-2M, HN-Master did not mention the CPA of 1.5nm.

satisfied that HN-2M was aware of the traffic conditions and familiar with the navigational equipment, which HN-2M stated was similar to that on his previous ship[15].

1.1.1.14 At approximately 0224H, HN-Master handed over the conn and navigational watch to HN-2M and remained on the bridge. By about 0350H, HN passed Horsburgh Lighthouse to starboard, and HN-2M reported to VTIS East accordingly. Around 0400H, HN-2M instructed HN-ASD1 to call HN-ASD2 to relieve him as the lookout. Shortly afterwards, HN-ASD2 arrived, took over lookout duty from HN-ASD1 who then left the bridge to rest. At about 0412H, after clearing the eastern boundary of the TSS, "Full Away on Passage" (FAOP) was rung, and the engine speed increased to 65.5 revolutions per minute (rpm), corresponding to full sea speed.

1.1.1.15 HN-Master reviewed the prepared night orders with HN-2M. These orders instructed watchkeepers to maintain a lookout, keep a safe distance from other ships, and to inform HN-Master immediately in case of any uncertainty. HN-Master also instructed HN-2M to sign the night order book after the review.

1.1.1.16 Once in open waters, HN-Master reviewed the radar and Automatic Radar Plotting Aid (ARPA) systems, approached HN-2M who was at the Electronic Chart Display and Information System (ECDIS), and discussed the navigational situation and prevailing weather. Satisfied with HN-2M's familiarity, HN-Master advised HN-2M to call HN-3M[16] at around 0600H or 0630H if HN-2M[17] felt sufficiently alert to continue, noting that HN-3M had earlier left the bridge to rest after securing the forward station. At about 0430H, HN-Master[18] left the bridge.

1.1.1.17 At around 0500H, HN was transiting along a high-density traffic route in the South China Sea and approaching a planned waypoint which required a course alteration from 066° to 017°. HN-2M delayed the course alteration to

[15] Although, the navigational equipment on HN was similar to that on his previous ship, according to HN-2M, he was not fully familiar with its operation; however, this was not communicated to HN-Master at the time.
[16] HN-2M and HN-3M were standing 6-hour watches. Since HN-3M had stayed up beyond his previous watch (ending at midnight) to heave the anchor during the departure from Singapore, HN-Master preferred to allow him some extra rest, which HN-2M agreed to.
[17] HN-2M stated that he had told HN-Master at about 0403H that he was tired and had asked for CM to take over the watch duty. The investigation team reviewed the VDR audio recording and was not able to confirm this conversation as the audio track was not clear. This information about getting CM to relieve HN-2M also could not be established.
[18] Before leaving the bridge, according to HN-Master, he asked HN-2M on several occasions whether he was feeling fit to continue the watch, to which the HN-2M replied as affirmative.

allow a ship on a reciprocal course to pass[19]. Once the ship had cleared, HN-2M instructed HN-ASD2 to switch to manual steering and alter course.

1.1.1.18 By about 0509H, HN-2M ordered a further course change to 014°. Once steadied, the autopilot was re-engaged. At about 0518H, HN-2M adjusted the course to the planned 017°.

1.1.1.19 At approximately 0520H, HN-2M altered course to 026°, to allow the ship on the starboard bow to cross ahead. The ship passed at 0531H at a distance of approximately 1.2nm. At about 0526[20]H, HN-2M adjusted the course back to the planned track at 018°.

1.1.1.20 At around 0530H, HN-ASD2 reported several targets ahead. HN-2M consulted the X-band radar and visually identified a ship directly ahead, about 7.6nm away, with deck lights and without navigation lights, later identified as CI. Two additional ships on reciprocal courses were seen on the starboard bow. HN-2M decided to maintain the current course of 018° to allow them to pass safely. See **figure 1**.

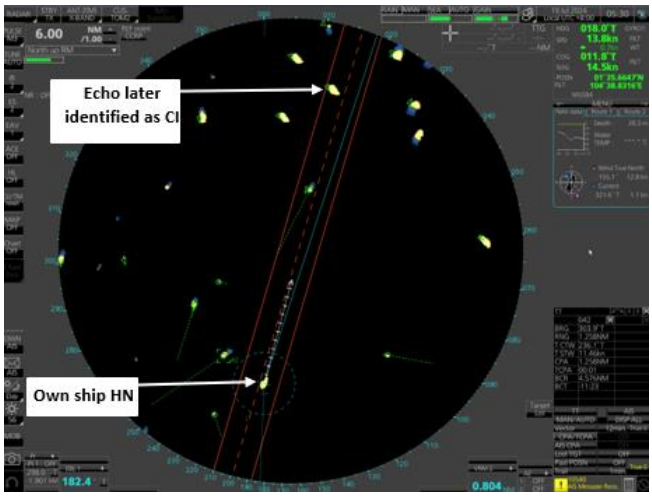

Figure 1: X-band radar display at 0530H. (*Source*: HN-Company and annotation by TSIB)

[19] HN-2M was aware of the surrounding ships and their CPA. During the interview, HN-2M could not recall whether the CPA warning alarm had been acknowledged or silenced. HN-2M did not report hearing any CPA alarm. Based on the Company's investigation report, HN S-band radar CPA and TCPA alarms were set at 1.5nm and 20 minutes but silenced. The alarms on the X-band radar were deactivated. Notably, if the conditions changed after a CPA warning had been acknowledged or silenced, the system would not trigger an additional alarm.

[20] Around this time, CI appeared as a radar target on both the S-band and X-band radars at approximately 8nm, but it was not acquired on either radar. Information obtained from HN VDR.

1.1.1.21 At about 0540H, HN-2M entered the chartroom[21] located within the bridge area, sectioned off by a light curtain during the dark hours, to prepare reports for the Information Fusion Centre (IFC) and the Automated Mutual Assistance Ship Rescue System (AMVER). HN-2M explained that the decision to work on the two reports was due to heavy workload and limited time during his day watch duty. HN-2M also stated that he felt tired after travelling to join the ship, immediate duties and disrupted rest onboard ship. While HN was in close proximity to other traffic, HN-2M moved between the chartroom and the wheelhouse, during which HN-ASD2 remained alone in the wheelhouse whenever HN-2M stepped away.

1.1.1.22 By about 0545H, CI was acquired on X-band ARPA, showing a CPA of 0.18nm in 17 minutes. HN-2M informed HN-ASD2 that after the ship, identified as Target 47 had passed on HN's starboard side, a course change would be made to increase CPA from CI ahead. At that time, several radar targets had already been acquired, including CI. However, according to HN-2M, he did not take note of the target data, including CPA and TCPA. HN-2M then entered the chartroom again, see **figure 2**.

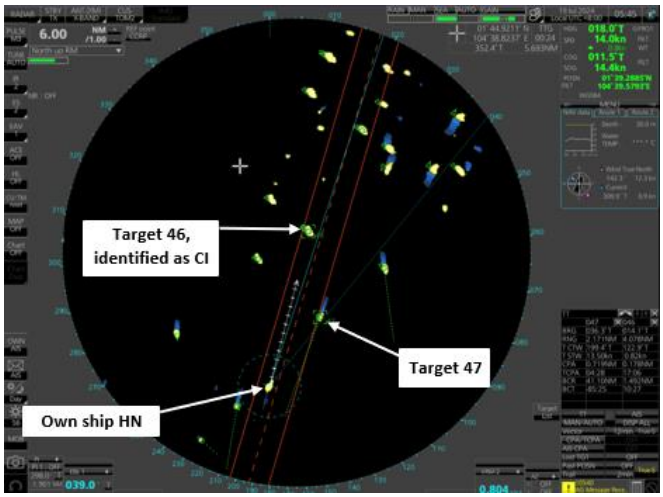

Figure 2: X-band radar display at 0545H. (*Source*: HN-Company and Annotation by TSIB)

1.1.1.23 At about 0551H, HN-2M returned to the wheelhouse. He confirmed Target 47 had cleared to starboard. CI was at 2.9nm away, with CPA of nearly zero in approximately 12 minutes. HN-2M made a minor starboard adjustment,

[21] HN-2M remained within the bridge area and retained access to navigational equipment and lookout.

altering course from 018° to about 020°.

1.1.1.24 At about 0554H, after confirming that HN would pass ahead of CI by less than 200m, HN-2M observed another radar target, Target 53, about two points on the starboard bow, with CPA of eight cables in six minutes. At that time, HN-2M intended to have HN pass between CI and Target 53, which were approximately 0.7nm apart from each other. See **figure 3.** HN-2M then returned to the chartroom.

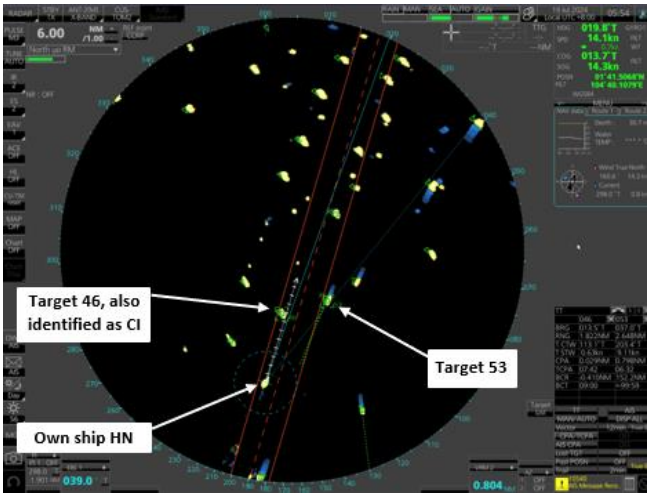

Figure 3: X-band radar display at 0555H. (*Source*: HN-Company and annotation by TSIB)

1.1.1.25 At about 0558H[22], according to HN-ASD2, calls were made to HN-2M several times[23] but no response was received[24]. During this period, a slight course alteration was observed to starboard from 020° to 023°[25]. CI was now 0.8nm away, with zero CPA in three minutes. HN-ASD2 pulled the curtain and called HN-2M urgently.

1.1.1.26 At about 0601H, HN-2M returned and saw a large ship close ahead with the deck lights on, estimating the distance to be less than one cable. HN-2M immediately switched to manual steering and applied hard starboard rudder.

[22] HN-2M reiterated his belief that HN-ASD2 independently altered the course to starboard at about 0558H. However, the investigation team checked with VDR information and confirmed that the heading data did not indicate any changes in HN's course.
[23] The VDR audio suggested that HN-ASD2 asked HN-2M whether to alter course to starboard, rather than stating that he had done so.
[24] According to HN-2M, he did not hear the calls from HN-ASD2, until the curtain was pulled later.
[25] The available evidence did not establish whether this adjustment resulted from normal autopilot heading corrections or a manual input.

According to HN-2M, upon sighting the ship ahead, he was momentarily startled and questioned HN-ASD2 why the situation had not been reported earlier.

1.1.1.27 Despite the manoeuvre, HN-2M assessed that a collision was unavoidable. At approximately 0602H, at position 01°43.4'N, 104°40.5'E, HN's bow contacted CI's port anchor chain. The anchor chain entangled with HN's port bilge keel, drawing CI closer.

1.1.1.28 After HN impacted CI, CI's bulbous bow breached HN's shell plating near the Heavy Fuel Oil Tank (HFOT) 1P and Cargo Oil Tank (COT) 6P, rupturing the bulkhead and causing fire on both ships. CI's bow flare also struck HN's port bridge wing, partially detaching it.

1.1.2 Post-collision events

1.1.2.1 HN-Master was awakened by the collision and proceeded directly to the bridge. While on the way to the bridge, he met HN-2M, who had gone to alert him. Upon arrival at the bridge, the Master stopped the main engine and activated the general alarm.

1.1.2.2 Upon assessing the situation with HN-2M, HN-Master observed significant structural damage, including a deformed portside bridge wing and a fire near the bunker tanks, located forward of the accommodation on the port side.

1.1.2.3 The fire, which broke out immediately after the collision, spread across both ships and the surrounding sea surface. See **figure 4.**

Figure 4: Photograph taken later in the day shows residual fire and smoke originating from HN's breached HFOT 1P and COT 6P. (*Source*: CI-Company and annotation by TSIB)

1.1.2.4 Recognising the severity of the situation and the potential of naphtha[26] cargo being affected by the fire, HN-Master broadcast a Mayday distress call via VHF Channel 16 and DSC[27] at around 0605H, requesting immediate assistance. About one minute later, HN-Master issued an abandon ship order over the public address (PA) system and transmitted a distress alert via MF/HF DSC.

1.1.2.5 Flames engulfed the port side of the accommodation, and smoke spread to the starboard side. The crew assembled at the liferaft stations on A deck, as smoke and fire obstructed the lifeboat embarkation area on C deck, likely due to spilled fuel or cargo. Initial attempts to launch the liferafts were abandoned after fire was observed on the sea surface. The crew relocated to the forward station, where a six-man liferaft was launched[28], and an embarkation ladder was rigged. All crew were accounted for.

1.1.2.6 When HN-Master reached the forecastle, he observed that the forward liferaft had already been launched and that HN-2M was already inside the liferaft, with some of the crew on the embarkation ladder. HN-Master stated that he had not instructed HN-2M or any other crew to board the liferaft. Given the prevailing emergency condition, with oil observed spreading on the starboard side towards the liferaft, HN-Master further halted the embarkation operation and instructed the crew on the ladder to return onboard the ship, while HN-2M, already inside the liferaft to remain, was instructed to remain.

1.1.2.7 Meanwhile, upon seeing the crew return to the ship, HN-2M attempted to climb[29] back up the embarkation ladder. While partway up the ladder, HN-2M became exhausted, fell into the sea, and was covered in oil, rendering him unable to reboard the ship or the liferaft. He held onto the liferaft's lifeline and waited for assistance. HN-Master then instructed HN-3M and a Third Engineer

[26] Naphtha is highly flammable with a low flash point, and its vapours can form explosive mixtures with air at ambient temperatures. Ignition sources such as sparks, open flames, or static discharge can ignite the vapours, potentially causing flash fires or explosions.
[27] Digital Selective Calling (DSC) is an automated radio communication system used to send distress alerts, calls, and messages to specific ships or shore stations without requiring a continuous voice transmission. It simplifies and speeds up communication in emergencies and routine maritime operations.
[28] According to HN-2M, after launching the liferaft, he descended the ladder, and seeing the raft was drifting towards the fire, he entered the water and brought it back alongside for boarding.
[29] With mean draught 11.33m, HN-2M would need to climb up about 9.6m.

(HN-3E) to descend to the liferaft and assist HN-2M. After several attempts, they pulled HN-2M back onto the liferaft.

1.1.2.8 As HN drifted northwest, the easterly wind cleared some of the smoke from the starboard side. HN-Master ordered the launch of the two 16-man liferafts from A deck, aft of the rescue boat. After confirming that all personnel were safely aboard the liferafts, HN-Master abandoned HN.

1.1.2.9 At around 0615H, the Singapore Maritime Rescue Coordination Centre (MRCC) confirmed that HN had collided with CI approximately 26nm east of Malaysia at position 01°43.4'N, 104°40.5'E. The Singapore Naval Ship RSS Supreme and the Malaysian Coast Guard were activated and responded to rescue all 22 crew members from the liferafts. Salvage tugs also arrived within hours, but HN remained on fire.

1.1.2.10 RSS Supreme picked up 16 of the 22 crew members from HN. The remaining six, who were in a liferaft, were picked up by a Malaysian government ship and later transferred to the RSS Supreme.

1.1.2.11 By about 1145H, HN-Master informed HN-Company that all crew had been safely rescued. At about 1700H, RSS Supreme transported all 22 crew members to the naval base.

1.1.3 Damage assessment of HN

1.1.3.1 Assessments indicated breaches to the hull in the area of COT 6P and HFOT 1P, contributing to post-collision fire and structural damage.

1.1.3.2 The hull breaches resulted in the loss of approximately 4065.44 MT of naphtha cargo from COT 6P and approximately 565 MT of Very Low Sulphur Fuel Oil (VLSFO) from HFOT 1P. **Figure 5** shows a portion of the VLSFO leaked into the sea. The contaminated oil-water mixture was later collected using a slop barge.

Figure 5: Image of the ship showing collision impact and subsequent fire damage. (*Source*: HN-Company and annotation by TSIB)

1.2 Narrative by Ceres I's crew (CI-Crew)

1.2.1 Pre-collision events

1.2.1.1 On 8 July 2024, CI arrived at an anchorage in the Port of Singapore primarily for a crew change and machinery repairs, following the completion of dry-docking in China.

1.2.1.2 On 11 July 2024, at 1500H, CI anchored at a location (01°43.4'N, 104°40.5'E) in the South China Sea, to await further voyage orders and continue ongoing repairs. The ship was in ballast condition, with all cargo tanks gas-free, after dry-docking.

1.2.1.3 CI displayed the required signals for an anchored ship consisting of an all-round white light at the forward and stern masts and kept deck lights illuminated during the hours of darkness.

1.2.1.4 Six shore engineers and technicians (herein referred to as shore workers) boarded CI to repair machinery. They remained onboard as the ship shifted to its new anchor position at the eastern OPL. Of these six workers, two were temporarily housed in a 20-foot container[30] on the starboard side of 'B' deck, while the remaining four were accommodated in the ship's living quarters. As additional repairs were identified, eight more shore workers joined and were

[30] This 20-foot container was used as temporary living quarters. Further information regarding the 20-foot container used as living quarters was requested from the STPR flag Administration; however, a response has not yet been received.

accommodated in the ship's living quarters.

1.2.1.5 According to the Master, a safety orientation[31] covering the ship's fire-fighting appliances (FFA) and life-saving appliances (LSA) was conducted before the shore workers commenced work. The orientation included instructions on mustering at the designated area upon activation of the fire alarm. The engineering company assigned to carry out the machinery repairs stated that only shore workers with prior shipboard experience were selected for such tasks, in view of the shipboard environment and associated risks.

1.2.1.6 On 19 July 2024, CI remained anchored in 31 m depth of water, secured by the port anchor with nine shackles[32] of chain deployed. The bridge anchor watch, from 0400H to 0800H was manned by the Chief Mate (CI-CM), an Additional Officer (CI-AO), and one ASD (CI-ASD). This team monitored the ship's position and surroundings. At about 0500H, CI-ASD was assigned to assist with deck operations and left the bridge. Other crew and shore workers were resting, while some personnel were on deck receiving stores. Sunrise was expected between 0630 and 0700H.

1.2.1.7 Weather conditions were fair, with fresh to strong winds, moderate seas, and visibility exceeding 5nm. At around 0500H, the launch boat Dolphin 1 came alongside CI's port side, transporting the on-signing Chief Engineer (CI-CE[33]) and two shore workers and spare parts. The outgoing CE and a shore worker departed on the same launch shortly after.

1.2.1.8 At approximately 0535H, riding on port anchor at long stay[34] in a southeasterly orientation, the CI's bridge team observed a northbound ship, later identified as HN, at a range of 6.4 nm, approaching from the starboard side at about 14 knots. The bridge team monitored HN's movement as part of their routine anchor watch, accessing its trajectory relative to CI and surrounding traffic.

1.2.1.9 Several ships were observed in the vicinity, either at anchor or transiting through the area, which was commonly used by ships awaiting orders or conducting operations near major traffic routes. CI-CM assessed HN's apparent course and speed as normal and did not attempt to make contact.

[31] The investigation team requested the safety orientation checklist but has not received it at the time of this report.
[32] The swinging circle radius for CI with 9 shackles of chain in 31m water depth is approximately 412m.
[33] Boarding was conducted using the ship's crane via a transfer basket.
[34] Long stay means the anchor chain, due to the effect of strong wind or current, was almost fully extended making a small angle between the chain and seabed.

The bridge team continued to monitor HN's movement along with other nearby ships. See **figure 6**.

Figure 6: X-band radar screenshot with AIS overlay. (*Source:* MMD[35] and annotation by TSIB)

1.2.1.10 By about 0555H, CI-CM observed HN approximately 1nm away, appearing to be heading directly towards CI rather than passing ahead. HN was still proceeding at approximately 14 knots, posing a risk of collision. According to CI-CM, he sounded the ship's whistle and instructed CI-AO to flash the Aldis[36] lamp at HN. No response was received from HN[37].

1.2.1.11 As HN continued to close in, CI's bridge team reportedly used the Aldis lamp and sounded the ship's whistle. However, due to the absence of CI's VDR data, these actions could not be verified. CI-CM and CI-AO then observed HN initiating a starboard turn. Shortly after, at approximately 0602H, CI experienced a shudder and a forward surge.

1.2.1.12 After the collision, HN's bow and hull entangled with CI's port anchor chain, which was under strain at long stay due to the current. The chain subsequently parted. As HN turned to starboard, CI began to surge forward, causing CI's bulbous bow to strike and penetrate HN's hull forward of the accommodation area.

[35] Malaysia Marine Department.
[36] Aldis lamp is a signal lamp used for visual communication. It uses Morse code to transmit messages between ships.
[37] The bridge team of HN reported that they neither saw nor heard any whistle or light signals. Furthermore, no whistle audio was detected in the HN VDR recording.

1.2.2 Post-collision events

1.2.2.1 Immediately following the collision, a flash fire ignited at CI's forward starboard bow, spreading rapidly across the main deck and igniting the sea surface on both sides of the ship. The fire seriously injured two shore workers (please see paragraph 1.2.3). CI-CM and CI-AO sounded the emergency alarm and made an announcement over the PA system, instructing all personnel to muster as per the muster list. CI-Master and CI-2M arrived on the bridge to coordinate the shipboard emergency.

1.2.2.2 CI-Master instructed CI-2M to transmit a distress alert and directed CI-CM to make further PA announcement regarding the collision and fire, repeating the order for all personnel to muster at the Cargo Control Room (CCR). CI-CM also instructed CI-AO to inform CI-2E in the engine room to shut down the air-conditioning system[38] to prevent smoke ingress into the accommodation.

1.2.2.3 The fire continued to burn on CI's bow and HN's port side before both ships separated. The fire spread across the main deck of CI, reaching both bridge wings and shattering the starboard bridge glass. Flames also spread over the surrounding sea surface. CI-CM later observed that CI had begun to drift due to the parted port anchor chain, although the rate of drift could not be determined. The nearby anchored tanker ANSHUN II broadcast a safety message to alert ships in the vicinity.

1.2.2.4 By about 0608H, all crew and shore workers had mustered at the CCR. Flames and smoke were visible through the windows. As smoke entered the accommodation, CI-Master instructed all personnel to cover their mouths and noses with wet cloths.

1.2.2.5 Between 0620H and 0624H, CI-Master instructed the crew to relocate to the No.5 starboard ballast tank on the main deck, which was free of fire and smoke. However, after assembling at the location, they realised it was in close proximity to HN, which was on fire. CI-Master then assessed the forecastle area on the windward side as a relatively safer location and ordered all personnel to move to the starboard bow, keeping low to minimise smoke inhalation.

1.2.2.6 Upon arrival at the forecastle area, CI-CM conducted a headcount, which was

[38] There was no indication that the ventilator inlet from the atmosphere for the air conditioning system had been physically closed or dampers were shut.

completed by about 0640H with all personnel accounted for. CI-Master noted many of the personnel were distressed or in shock. CI-Master, CI-CE, and CI-CM then returned to the accommodation area to reassess the situation and observed fires on the port side of C deck. At around 0700H, CI-Master organised firefighting operations. The fire in the accommodation area was brought under control and was fully extinguished by about 0800H, although isolated deck fires continued.

1.2.2.7 As CI drifted northerly at about 1.6 knots, attention turned to the evacuation of shore workers, particularly the two who were seriously injured. The launch Dolphin 1 returned and was later followed by a Singapore naval ship RSS Supreme. By about 0900H, all 14 shore workers including the two seriously injured, were transferred from CI to Dolphin 1 and later to RSS Supreme for medical care.

1.2.2.8 At approximately 0930H, after transferring all the shore workers, CI-Master ordered all crew to withdraw to the forecastle area as a safety measure against potential flare-ups. **Figure 7.**

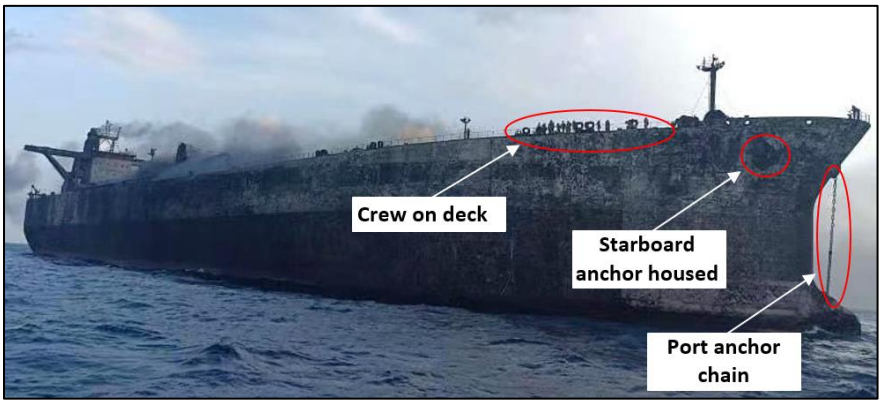

Figure 7: CI with the port anchor chain parted, starboard anchor housed, crew on deck, residual smoke, and fire damage to the hull and superstructure.
(*Source:* MMD and annotation by TSIB)

1.2.2.9 During an inspection at 0945H, the bulkhead of the steering gear room was extremely hot, and smoke was observed emanating from the funnel. The engine room door was partially opened, revealing an uncontrollable fire. Due to the proximity of the fuel oil tank, CI-Master ordered the firefighting team and crew to remain forward.

1.2.2.10 At about 1023H, CI-Master returned to the bridge and used a mobile phone to report the collision to CI-Company. While checking the AIS data to confirm HN's identity, he noted that the AIS signal was intermittent, likely due to fire damage to the AIS antenna located on the monkey island[39].

1.2.3 Injured shore worker onboard CI

1.2.3.1 The fire onboard CI resulted in the injuries of two shore workers, one of whom later died in hospital[40].

1.2.3.2 As part of the investigation, the team visited Singapore General Hospital to obtain information from the other injured shore worker who had survived. Through the Company's representative, the shore worker recounted that at approximately 0600H, he and his colleague who were both sleeping in the 20-foot container located on the starboard side of B deck, felt the ship shudder. Concerned that something had occurred, they exited the container to assess the situation. Upon stepping onto B deck, they were engulfed by a flash fire advancing from the forward starboard side. Both managed to reach the CCR, where crew members were mustering, in accordance with the instructions given during the safety orientation prior to commencing work onboard.

1.2.4 Damage assessment of CI

1.2.4.1 Initial assessments identified extensive fire damage to the ship's hull and superstructure. Notable losses included both the port and starboard cranes, the lifeboat, and the liferafts.

1.2.4.2 Additional damage included a completely burnt bosun store on the starboard side and partial fire damage on the port side. The port anchor and eleven shackles of chain were lost, and the port anchor chain stopper was damaged. Further damage included a burnt steering gear room, a damaged freshwater generator, and auxiliary engine No.2 generator. The main engine could not be turned, and its operational status remained uncertain (See **figure 8)**. A complete damage assessment was not available at the time of publishing this report.

[39] Monkey Island: The uppermost exposed deck above the ship's bridge or wheelhouse, where majority of the navigational equipment antennas are located.
[40] Report indicated that the deceased was suffering from burn injuries.

Figure 8: Images A and B of CI showing the damaged bow section (A) and fire damage of the hull and superstructure (B). (*Source*: CI-Company)

1.3 Crew matrix and experience

1.3.1 Manning of HN

1.3.1.1 At the time of the occurrence HN was manned by 22[41] officers and crew, in accordance with the Minimum Safe Manning Document (MSMD) issued by the flag Administration. The crew comprised various nationalities. Details of the crew members relevant to the occurrence are provided in Table 3.

Rank	Nationality	Years with Company	Years in Rank	Years Sailing
Master	Indian	3.6	7.4	13.7
2M	Sri Lanka	2.5	1.8	5.8
ASD2	Indian	8.8	2.5	8.8

Table 3

1.3.2 Additional details of relevant HN crew

1.3.2.1 HN-Master obtained his Unlimited Master Mariner Certificate of Competency

[41] The personnel comprised four Filipino, 16 Indian, one Irish and one Sri Lankan.

(COC) from the Maritime and Coastguard Agency (MCA[42]) in 2004. He was promoted to the rank of Master at BP Shipping in April 2010 and joined HN-Company as Master in 2020. He assumed command of HN on 19 May 2024 at Canvey Island, United Kingdom.

1.3.2.2 In preparation for HN's port call to Singapore, HN-Master arranged the watchkeeping duties and work schedules for the officers and crew. During the Class Annual Safety Survey, fire alarms tests were carried out while HN-2M was resting after joining HN, on 18 July 2024. These tests briefly activated the audible alarms and were conducted without the prior knowledge of HN-Master.

1.3.2.3 HN-2M, obtained his COC in 2011 and joined HN-Company as a Third mate in 2022. This was his fifth contract with HN-Company and his third assignment as a Second mate. In November 2022, he completed a five-day Bridge Team Management course. As per HN-Company's policy, he also completed the "BW Navigation" course, which was mandatory for all new deck officers within their 24 months of employment with HN-Company.

1.3.2.4 HN-2M described his travel and onboarding as follows:

(a) HN-2M awoke in Colombo, Sri Lanka at approximately 0830H on 17 July 2024 and was at ALF Shipping (Private) Limited at about 1230H to sign his employment contract and collect the required onboarding documents for HN. He returned to his residence around 1830H, before proceeding to Bandaranaike International Airport, where he arrived at approximately 2230H.

(b) On 18 July 2024 at about 0235H, he departed Colombo on a scheduled flight to Kuala Lumpur, arriving at around 0630H, and then took a connecting flight to Singapore, arriving at around 0910H. Together with four other crew members, he was transported to Marina South Pier and subsequently boarded HN by launch at around 1200H.

1.3.2.5 Upon boarding, he met the off signing 2M, had lunch, and began the handover process. At the time, the ship was engaged in multiple concurrent port operations, including bunkering, annual inspection, class survey, provisioning

[42] MCA is an executive agency of the United Kingdom government. It is responsible for implementing the UK's maritime safety policies, including the issuance of seafarer certifications, such as the Master Mariner Certificate of Competency (Unlimited). The MCA also oversees the UK's shipping registry, maritime safety, environmental standards, and maritime emergency response.

stores, garbage disposal, crew change, gyro and magnetic compass servicing, radio technician attendance, superintendent inspection, and other essential servicing works. While reviewing the passage plan, HN-2M was informed that gyro servicing and class surveys were still in progress. During this period, he was shadowing the off signing 2M as part of the handover process, including responsibility for navigational equipment and publications. HN-2M assisted the off signing 2M with Second Mate duties as part of the handover process until about 1800H.

1.3.2.6 At about 1800H, HN-2M[43] handed over duties to the HN-3M, had dinner, and returned to his cabin at about 1900H, where he rested at around 1930H.

1.3.2.7 At about 2120H, a fire alarm was activated. As no prior announcement had been made regarding a fire alarm test, HN-2M woke up and called the bridge, but the line was engaged. He exited his cabin and was informed by other crew members that it was a fire alarm test. The alarm continued for approximately 20 minutes.

1.3.2.8 Following the fire alarm test, HN-2M attempted to resume rest but was unable to sleep again. From his cabin, located adjacent to the staircase, he overheard crew preparing to sign off and dragging luggage. At around 2300H, he returned to the bridge.

1.3.2.9 HN-ASD2 who was on 0400H to 0800H watch during the occurrence, joined HN-Company in 2016 as a Trainee Seaman and was promoted to ASD in August 2021. This was his fourth contract as an ASD, and he had been onboard for approximately three months at the time of the incident. During his previous contract in 2023, he was recommended for promotion to the rank of Bosun in view of his performance.

1.3.2.10 HN-ASD1 signed on HN on 18 July 2024. On 15 July, he departed New Delhi for Bombay at about 1400H and arrived around 1700H, where he stayed overnight in a hotel. On 16 July 2024, he attended a pre-joining briefing at the BW office in Bombay before returning to the hotel. He departed Bombay at 2300H on 17 July 2024 on an overnight flight and arrived in Singapore at approximately 0715H on 18 July 2024. Later that day, he boarded the ship and was assigned the 1200H–1600H deck watch. After his duty, he rested from about 1700H, and he did not mention any disturbance to his rest during the

[43] HN-2M was put on 1200H-1800H shift immediately upon joining ship.

fire-alarm test that occurred later that night.

1.3.2.11 On 19 July 2024, he kept the 0000H–0400H bridge watch during the ship's departure from Singapore and handed over the lookout duty to HN-ASD2 before leaving the bridge for his rest.

1.3.3 Manning of CI

1.3.3.1 CI was manned in compliance with the MSMD issued by the flag Administration. The ship was crewed by 26 officers and crew, all of whom were nationals of the People's Republic of China (PRC). Details of the crew members relevant to the occurrence are provided in **Table 4**.

Rank	Nationality	Years with Company	Years in Rank	Years Sailing
Master	PRC	1	1.4	8
CM	PRC	2	1	1
AO	PRC	2	1	1

Table 4

1.3.4 Additional details of relevant CI crew

1.3.4.1 CI-Master joined CI on 3 July 2024 while the ship was at anchor. This was his first command on this ship. He had previous trading experience between Singapore and Japan and held a Master's COC issued by the China Maritime Safety Administration (MSA) in 2010.

1.3.4.2 Upon taking command, CI-Master conducted a 40-minute handover with the outgoing Master, during which he received cash, trading certificates, and CI-Company instructions. As the ship had recently completed dry-docking and there was no trading record, no discussion was held regarding previous voyages. His inspection found the deck areas to be in satisfactory condition. He did not enter the engine room during the handover and was informed that the auxiliary engine generator was inoperative.

1.3.4.3 CI-CM joined CI in October 2023 while the ship was at the Singapore

anchorage. He held a Chief Mate COC issued by the China MSA in 2023. His responsibilities included supervising cargo operations, managing the deck department, and supporting the Master on crew welfare and administration. CI-CM also kept bridge watches from 0400H-0800H and 1600H-2000H, assisted by CI-AO and CI-ASD.

1.3.4.4 CI-AO joined CI in April 2024 at Zhoushan, China. He held a Third Mate COC issued in July 2023. He was assigned duties under the supervision of CI-CM, following the same watch schedule as CI-CM.

1.4 Safety Management System and Procedures of Hafnia Nile (HN)

1.4.1 The Document of Compliance (DOC) was issued to HN-Company by Lloyd's Register of Shipping (LRS) on 4 June 2021, following verification completed on the same day. The certificate is valid until 7 June 2026, with the most recent annual verification conducted on 11 July 2024.

1.4.2 A Safety Management Certificate (SMC) was issued to HN by LRS on 12 October 2022 and is valid until 9 December 2027.

1.4.3 HN operated under an approved SMS in compliance with the International Safety Management (ISM) Code and the flag Administration’s requirements. The onboard documentation included policies, operational procedures, manuals, checklists, and relevant industry publications.

1.4.4 The SMS implemented onboard HN included a Safety and Environmental Protection Policy and incorporated procedures for Bridge Resource Management (BRM) and bridge watchkeeping.

1.4.5 Work and Rest Hours

1.4.5.1 HN-Company’s SMS implemented onboard HN included provisions for work and rest hours in accordance with the Maritime Labour Convention (MLC) and the Standards of Training, Certification, and Watchkeeping (STCW) requirements.

1.4.5.2 Crew work and rest hours were recorded and monitored as part of onboard SMS procedures to prevent fatigue and meet operational requirements. Regular audits were conducted, and any non-conformities were reported and addressed.

1.4.5.3 The investigation team obtained records of crew work and rest hours from HN-Company up to 14 July 2024, which showed compliance with MLC and STCW requirements. Records beyond this date were unavailable due to fire damage sustained onboard.

1.4.6 Bridge Resource Management (BRM) and Practices

1.4.6.1 The SMS implemented onboard HN incorporated BRM practices to promote safe navigation and effective use of bridge resources. The roles and responsibilities of the OOW and other bridge team members were clearly defined.

1.4.6.2 The following practices were documented in HN-Company's SMS under its BRM guidance:

(a) Bridge manning during high-density traffic situations was to include the presence of additional personnel, such as the Master or another officer, where necessary.

(b) Administrative or secondary duties were not to interfere with navigational responsibilities.

(c) Each bridge team member had defined duties and was expected to remain fully engaged in monitoring and navigation.

(d) Bridge manning levels were specified for different phases of navigation as follows:

- Departure from anchorage:
    - SMS requirement: Five persons – Pilot, Master, OOW, Helmsman and Lookout.
    - HN maintained: Four persons – Pilot, Master, OOW and Helmsman.
- Transit through the TSS up to Horsburgh Lighthouse – hand steering:
    - SMS requirement: Four persons – Senior Officer, OOW, Helmsman and Lookout.

- HN maintained: During the initial stage after joining the eastbound lane, three persons – Senior Officer, OOW and Helmsman. Thereafter, when the ship was on autopilot under good visibility, light traffic and stable steering conditions, the helmsman also served as the lookout, and the bridge manning aligned with the SMS requirement.

- Transit through the TSS up to Horsburgh Lighthouse – auto-steering:
  - SMS requirement: Three persons – Senior Officer, OOW and Lookout.
  - HN maintained: Three persons – Senior Officer, OOW and Lookout.

1.4.7 Additional Duties and Watch Support Arrangements

1.4.7.1 According to the HN-Company's SMS implemented onboard HN, officers were expected to inform the Master if additional support was required to complete assigned duties. HN-2M was assigned two reports in addition to his navigational watch. As all onboard documents were lost in the fire, interview statements did not indicate that HN-2M had requested additional support or informed the Master that he was overloaded.

1.4.7.2 As per HN-Company's SMS, the Master had discretion to adjust the bridge team composition based on operational requirements. The Master or OOW could request the assistance of an additional bridge officer or lookout when deemed necessary.

1.4.7.3 The Night Order Book was maintained onboard to guide the OOW and support safe watchkeeping practices.

1.4.8 Requirement for Watchkeeping Responsibilities

1.4.8.1 The OOW was responsible for the conduct of bridge watchkeeping, including the completion of required checklists and the maintenance of navigational records.

1.4.8.2 In the absence of the Master, the OOW was expected to take immediate action as necessary, to ensure the safety of navigation.

1.4.8.3 Maintaining a proper lookout was a core responsibility of the OOW and was not to be compromised by administrative duties or other distractions.

1.4.8.4 During hours of darkness, the OOW was required to manage lighting and visual conditions to preserve effective night vision and maintain visual lookout capability.

1.4.8.5 OOW was required to maintain situational awareness of the ship's position, traffic in the vicinity, and any external factors that could affect safe navigation.

1.4.9 Disruption and distraction prevention

1.4.9.1 The Company's SMS included provisions on disruption and distraction prevention. Under these provisions, the OOW[44] was not permitted to engage in, or allow any distractions or non-operational activities that could interfere with safe navigation.

1.5 Safety Management System and Procedures of Ceres I (CI)

1.5.1 The DOC for CI-Company was issued by the International Classification Bureau (ICB) on 6 June 2024, following verification completed on 9 January 2024. It is valid until 8 January 2029.

1.5.2 The SMC for CI was issued by the Panama Maritime Documentation Services (PMDS) on 5 June 2024 and is valid until 4 November 2024.

1.5.3 CI was operating under an approved SMS in compliance with the ISM Code and the flag Administration's regulations. The onboard SMS documentation included policies, operational procedures, manuals, checklists, and applicable publications.

1.5.4 The SMS implemented onboard CI included a safety and environmental protection policy, as well as guidance on BRM for safe anchoring and bridge operations.

1.5.5 Work and rest hours

1.5.5.1 As at the time of this report, the investigation team had not received crew work

[44] During the interview, HN-2M stated that he was aware of the SMS requirement prohibiting any distractions or non-operational activities that could interfere with safe navigation.

and rest hours records from CI's flag Administration.

1.5.6 Bridge Resource Management (BRM)

1.5.6.1 The Company's SMS implemented onboard CI provided BRM guidance to ensure safe navigation and operations. CI-Master issued daily orders recorded in the Bridge Order Book, which were signed by all watchkeepers to confirm understanding and compliance. These orders included the following:

- Maintaining a continuous lookout.
- Conducting hourly anchor position checks.
- Monitoring VHF Channel 16.
- Warning approaching ships to maintain safe distance.
- Conducting security and safety patrols after each watch.
- Immediately notifying the Master of any concerns.

1.6 Meteorological information

1.6.1 On the morning of 19 July 2024, the weather conditions were fair, with visibility exceeding 12 nm. Winds were fresh to strong (approximately 15–25 knots, Beaufort Scale 5–6), and the current ranged between 2 and 4 knots. Seas and swell conditions were reported to be between 4 and 5 m.

1.7 Location of the collision

The collision took place at a location in the South China Sea where many ships were either making way, at anchor, or drifting. This location is near a route[45] commonly used by ships entering, exiting, or transiting the South China Sea.

[45] The route, though not explicitly defined in any IMO publication, is widely recognised as a customary route. It typically refers to the established path commonly followed by ships between ports or regions, based on historical usage, navigational safety and operational efficiency.

2 ANALYSIS

The investigation team reviewed the actions and the likely contributing factors onboard HN and CI in relation to the collision. The following aspects were examined:

- Actions of the bridge teams of HN and CI
- HN-2M's condition during watchkeeping duty
- Human Element
- Deactivation of CPA/TCPA alarms
- HN Bridge Manning Level
- Briefing of CI's shore workers on shipboard safety

2.1 Actions of the bridge team on HN and CI.

2.1.1 HN bridge team

2.1.1.1 As it was HN-2M's first navigation watch since joining HN, HN-Master briefed him to maintain, in open sea, a minimum CPA of 1.5nm where practicable, and to call in the event of any uncertainty. At around 0400H, HN-ASD2 relieved HN-ASD1 and assumed the lookout duty. Following the briefing, HN-Master instructed HN-ASD2 to provide full lookout support to HN-2M during his first navigation watch. HN-Master then left the bridge to rest, leaving HN-2M and HN-ASD2 in charge of the watch.

2.1.1.2 As HN proceeded into the South China Sea, the passage plan did not identify the location as a high-density traffic area. However, HN was transiting a commonly used trade route where several ships were observed to be in proximity. The bridge team followed the planned track and acquired Target 46 (later identified as CI) on X-band ARPA, with a CPA of about 0.18nm in 17 minutes. Another radar echo (Target 47) was also observed on the starboard side.

2.1.1.3 At about 0550H, HN-2M went into the chartroom to prepare the IFC and AMVER reports, leaving HN-ASD2 alone at the wheelhouse. At that time, HN was in close proximity to several radar targets. By leaving the wheelhouse to

complete administrative tasks during this period, the bridge team's ability to maintain full situational awareness was reduced, with reliance placed on a single watchkeeper.

2.1.1.4 The investigation team opined that if HN-2M's intention was for HN to pass between CI and Target 53, which were approximately 0.7nm apart, it would be desirable for him to remain in the wheelhouse to monitor the developing situation. Leaving HN-ASD2 to manage the wheelhouse alone during such a close-quarters situation was not consistent with prudent bridge resource management and watchkeeping practice.

2.1.1.5 Alternatively, an earlier starboard alteration at around 0550H, after passing Target 47, would have allowed HN to pass both CI and Target 53 on the port side before resuming the planned route. Based on radar imagery (Figure 3), referenced in paragraphs 1.1.1.18 and 1.1.1.19, the area to starboard appeared to be clear of traffic and offered a greater navigable sea room. An earlier alteration at that stage would have likely resulted in a safer passing arrangement and prevented the close-quarters situation from developing.

2.1.2 CI bridge team

2.1.2.1 The CI bridge team, comprising CI-CM, CI-AO and CI-ASD[46], was on anchor watch. They monitored HN approaching at 14 knots from 6.4nm and initially assessed it as posing no immediate risk. At approximately 0555H, when HN was about 1nm away and on a direct approach, CI-CM instructed the use of Aldis lamp and whistle signals to alert HN. These signals were not acknowledged by HN, and the CI bridge team did not attempt to use VHF communication to alert HN.

2.1.2.2 The investigation team noted that while the International Regulations for Preventing Collision at Sea (COLREGs) prioritise the use of visual and sound signals for collision avoidance, VHF radio may serve as a supplementary tool to enhance mutual awareness during close-quarters situations. Although VHF is not required under COLREGs, and IMO cautions against its overreliance due to risk of misidentification, language barriers, or equipment limitations, it may still provide an additional opportunity to clarify intentions when visual or sound signals are not acknowledged.

[46] CI-ASD was assigned to assist with deck operations and left the bridge at 0500H.

2.1.2.3 The investigation noted that under IMO Resolution A.954[47](23) and SOLAS Chapter V[48], VHF Channel 13[49] is designated for bridge-to-bridge communications concerning navigational safety. In accordance with COLREGs[50] Rules 7 and 8, ships are expected to use all available means to assess collision risk and take early, effective action. In this case, when CI's bridge team observed HN maintaining a steady bearing and with decreasing range, an early call via VHF Channel 13 would have aligned with internationally recognised practices and may have alerted HN that CI was at anchor.

2.1.2.4 Although CI-Company's SMS required the bridge team to warn approaching ships when they were too close, it did not specify the means of doing so. The absence of such guidance limited the bridge team's use of available communication resources during the developing close-quarters situation.

2.1.2.5 No individual Human Element issues were identified on CI, however, procedural and organisational factors, including the lack of specific guidance on communication methods, limited the use of available resources during the developing close-quarters situation.

2.2 HN-2M's condition during watchkeeping duty

2.2.1 HN-Company's SMS allowed adjustment of bridge manning based on operational needs and stressed that navigation duties take priority over administrative tasks. These requirements highlighted the expectation for the OOW to remain fully engaged in monitoring the navigational situation while on watch.

2.2.2 The SMS stated that the OOW should not allow administrative work to interfere with navigation duties, especially during dense traffic conditions. During a follow-up discussion, HN-2M stated that his decision to prepare the two reports during navigational watch was influenced by having remained on duty beyond his scheduled watch period and by feeling tired at that time. He also stated that

[47] IMO Resolution A.954(23) – Proper Use of VHF Channels at Sea, adopted on 5 December 2003, IMO Assembly 23rd session.
[48] International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended – Chapter V: Safety of Navigation and Chapter IV: Radiocommunications.
[49] While VHF Channel 13 is designated for bridge-to-bridge communications concerning navigational safety under IMO Resolution A.954(23), ships commonly monitor Channel 16 as the international distress and calling frequency. In practice, Channel 16 may be used to initiate contact when a working bridge-to-bridge channel is not known, before switching to Channel 13 or another agreed channel for direct navigational coordination.
[50] Convention on the International Regulations for Preventing Collisions at Sea (COLREGs), 1972, as amended – Rules 7 and 8: Risk of Collision and Action to Avoid Collision.

he assessed the navigational situation as manageable when he began preparing the reports.

2.2.3 Although the rest time allocated to the HN-2M after joining the ship was in compliance with STCW rest-hour requirements as per the Manila Convention, the investigation team assessed the adequacy of rest obtained in the context of actual travel, workload, and rest disruption. HN-2M joined HN at around noon on the day before the collision, after traveling for about 12 hours. He was immediately assigned the 1200H–1800H to shadow the off signing 2M and went to rest only at around 1930H, after traveling for about nine hours of overnight flights. His rest was disrupted by unannounced fire alarm testing at about 2120H, after which he returned to the bridge at around 2300H and commenced his next navigational watch at midnight. HN-2M had no more than two hours of uninterrupted rest before assuming the midnight watch.

2.2.4 The collision occurred just before the end of HN-2M's six-hour midnight watch duty. At that time, he had been on duty for almost six hours following limited rest. Hence, it is possible that HN-2M's performance may have been affected by fatigue. The circumstances affecting performance aspects are discussed under Section 2.3 (Human Element).

2.2.5 The investigation team also reviewed the travel and watchkeeping schedule of HN-ASD1, who signed on the same day as HN-2M. HN-ASD1 undertook overnight international travel and arrived in Singapore at approximately 0715H on 18 July 2024. The travel period, from 2300H on 17 July 2024 until boarding HN in the morning of 18 July 2024 was more than 12 hours, with limited rest in flight. HN-ASD1 was assigned the 1200H–1600H deck watch later that day and subsequently kept the 0000H–0400H navigation watch during the ship's departure from Singapore. While HN-ASD1 was not on duty at the time of the collision, this observation provides contextual insight into rest-hour management practices and is not considered contributory to the occurrence.

2.2.6 While it is not uncommon for newly joined crew to assume duties soon after boarding, consideration should be given to the duration and timing of their travel, and whether sufficient rest has been obtained before assigning them to safety-critical duties. The assumption that newly joined officer has been adequately rested, and alert, may not always reflect actual condition of the individual.

2.2.7 It would be desirable for HN-Company's SMS to include guidance ensuring

that newly joined personnel are provided with adequate rest before being assigned to safety-critical watchkeeping duties.

2.3 Human Element (HE)

2.3.1 The Human Element, as defined in IMO Resolution A.947(23), represents the multi-dimensional factors that influence human performance in maritime operations, including physical, psychological, and organisational aspects. In this occurrence, the investigation team reviewed HN-2M's actions and behaviour from the period prior to joining the ship through to the time of the collision to assess how human factors may have affected situational awareness and decision-making.

2.3.2 With less than two hours of uninterrupted rest over a 38.5-hour period, HN-2M was likely experiencing tiredness, which could have affected his situational awareness and decision making, particularly during the developing close-quarters situation, as follows:

(a) The investigation noted that although HN-2M had opportunities to make an earlier starboard alteration, he did not act until the close-quarters situation had developed.

(b) Following the collision, standard practice would normally involve stopping the engine immediately and activating the general alarm. Instead, HN-2M left the bridge to alert HN-Master.

2.3.3 HN-Master had extended HN-2M's watch duty from 4-hourly to 6-hourly on the basis that a newly joined crew member was expected to be well rested and HN-2M had taken rest from 1800H-0000H. This decision was also influenced by the need to allow HN-CM additional rest following a period of intensive activities prior to and during the anchorage in Singapore and HN-3M had only rested at about 0200H.

2.3.4 The occurrence highlighted that the assumption that newly joined crew are well rested may not always be valid, particularly where the crew members has undertaken overnight travel without adequate rest. While it is not uncommon for junior officers to accede to watchkeeping arrangements set by the Master when feeling tired, this occurrence underscored the importance of communicating concerns regarding fitness for duty when such concerns exist.

2.3.5 HN-CM had been alternating six-hour bridge watch duties with HN-Master during the 22 hours prior to arriving in Singapore and supervising port activities while at anchor, including additional port-related duties such as class annual survey activities. According to HN-Master, HN-CM informed him that she was very tired and feeling unwell during dinner on 18 July 2024. In view of her recent workload and reported condition, it is unclear whether HN-Master had asked whether HN-CM was able to take over bridge watch duty from HN-2M at 0400H the next morning. HN-Master stated that he planned the watchkeeping arrangement on the basis that the continuation of a six-on/six-off watch system among the junior officers met the minimum rest-hour requirements under STCW, and HN-Master had given HN-CM a prolonged rest period from 2000H to 1600H the next day.

2.3.6 Such a prolonged rest period for a senior officer increased the workload of other watchkeeping officers. In this case, HN-2M was assigned a six-hour watch duty instead of a four-hour watch duty. HN-Master stated that this decision was based on his understanding that HN-2M had rested onboard from 1800H to 2400H on 18 July 2024, and that HN-3M had rested after standing down from the forward station at about 0200H before commencing another six-hour watch duty from 0600H to 1200H. While this arrangement was intended to meet minimum rest-hour requirements, it resulted in increased watchkeeping demands on the junior officers during the departure phase.

2.4 Deactivation of CPA/TCPA alarms

2.4.1 The investigation team noted that the CPA and TCPA alarms on the S-band radar had been silenced, and the X-band radar alarms were deactivated. As a result, no audible alerts were available to prompt the bridge watchkeepers of the developing close-quarters situations. The absence of active radar alarms removed an important automated safeguard that would normally assist bridge watchkeepers in identifying a reducing CPA with CI and the southwest-bound Target 53, increasing reliance on visual lookout and manual radar observation. Maintaining radar alarms in an active state throughout navigational watches would support the timely detection of collision risks and safer operational decision-making.

2.5 HN Bridge Manning Level (BML)

2.5.1 In the preparation for departure, the bridge team of HN initially comprised HN-

Master, the Pilot, HN-2M, HN-ASD1 and the OS. The OS, assigned for lookout duty, was sent to the main deck for the re-rigging of the pilot ladder and anchoring duties. This reduced the bridge manning level to BML 4, instead of the SMS requirement of BML 5.

2.5.2 HN-Company had identified the Singapore TSS as an area where the watch composition for 'confined waters' was to be applied. HN-Company's SMS required the bridge team to maintain BML 4 when transiting the Singapore TSS; however, at this stage of the passage, the bridge manning comprised HN-Master, HN-2M, and HN-ASD1, equivalent to BML 3. During this early part of the passage, traffic was light and navigational conditions were stable.

2.5.3 Although this was not contributory to the occurrence, it is desirable that the requirements of the SMS be consistently met. Any deviations from SMS requirements should be reviewed to understand the reasons and provide feedback to the Company.

2.6 Briefing to shore workers onboard CI on shipboard safety

2.6.1 CI-Master reported that a safety orientation was conducted for the shore workers when they came onboard CI, including instructions on mustering at the designated location in case of an emergency. The prior shipboard experience of the shore workers provided a basic level of emergency preparedness. Their ability to proceed to the muster point as instructed suggested that the key elements of the orientation had been understood and followed.

2.6.2 The investigation team considered that the two shore workers' response to the ship's shudder was a normal reaction. It was unfortunate they were caught in a sudden flash fire after exiting the container.

3 CONCLUSIONS

From the information gathered, the following findings are made. These findings should not be read as apportioning blame or liability to any particular organisation or individual.

3.1 During the 0000H–0600H watch, while navigating in close proximity to several targets, HN-2M left the wheelhouse to prepare IFC and AMVER reports, leaving only HN-ASD2 to manage the bridge. These reports were not time-critical and could have been completed later in the day. By prioritising administrative work over navigation during a developing traffic situation, the bridge team's situational awareness was reduced and the watchkeeping arrangement did not align with the SMS expectation that navigation duties must not be disrupted by non-operational tasks.

3.2 HN-2M had less than two hours of uninterrupted rest, in the 38.5-hour period, before commencing the midnight watch, following overnight travel, immediate assumption of duties after joining, and rest disturbance caused by unannounced fire-alarm testing. The investigation also noted that HN-ASD1, who signed on the same day, undertook duty shortly after arrival following overnight international travel. These reflected a broader risk that newly joined personnel may commence operational duties before obtaining adequate recovery time, increasing the potential risk for tiredness.

3.3 With only about two hours of rest in a 38.5-hour period, HN-2M was likely experiencing fatigue, which may have reduced his alertness and affected his performance and judgement during the developing close-quarters situation, contributing to the occurrence.

3.4 The S-band radar's CPA and TCPA alarms had been silenced, and the X-band radar alarms were deactivated. The absence of active alarms removed an important safeguard that could have assisted in detecting the reducing CPA with CI and the southwest bound Target 53, increasing reliance on visual and manual monitoring at a time when alertness may have been reduced.

3.5 CI's bridge team detected HN at a range of about 6.5 nm and initially assessed the situation as non-critical. No early preparatory measures or communication were initiated, despite HN maintaining course and speed on a steady bearing.

Although this did not amount to a human-element issue on CI, it reflected a missed opportunity for earlier risk assessment.

3.6 When no alteration of course or speed was observed from HN, CI's bridge team reported using sound signals and the Aldis lamp to warn HN. However, these warnings were not acknowledged by HN. Despite the escalating risk, VHF was not used as an additional means of communication, which could have supported situational clarification in accordance with internationally recognised practice.

3.7 Although CI-Company's SMS required the bridge teams to warn approaching ships when they came too close, the SMS did not specify the means of doing so. In the absence of procedural guidance, the bridge team relied solely on visual and sound signals, limiting their response options in a time-critical situation. No Human Element issues were identified on CI, however, the lack of procedural clarity contributed to limited use of available resources.

3.8 The ability of the shore workers to proceed to the CCR as instructed indicated that the essential elements of the shipboard safety briefing were understood. The investigation considered that the safety briefing was sufficiently effective in preparing them for emergency response actions.

4 SAFETY ACTIONS

4.1 Following the occurrence, HN-Company implemented a range of safety actions to address the operational and organisational factors in its internal review. These measures focused on improving bridge watchkeeping practices, fatigue risk management, BRM, and situational awareness. The Company also undertook actions aimed at strengthening safety culture, leadership engagement, and compliance with applicable requirements under the ISM Code, STCW Conventions, and COLREGs.

4.1.1 Addressing Crew Fatigue and Travel Management

To address the risk of newly joined crew being assigned to safety-critical duties while potentially tired, HN-Company reviewed and enhanced its Crew Travel Policy and introduced the following measures:

- Travel schedules are now planned to minimise fatigue, with overnight flights to be avoided for navigation watchkeepers wherever practicable.
- All top four officers and navigation watchkeepers (2M, 3M, and ASDs) are to be provided with one night of hotel rest at the joining port before assuming duty.
- Guidance was issued on flight routing based on total travel duration, and any deviations require approval by the Singapore Crewing Department office.
- Manning agents are required to monitor and report concerns related to travel tiredness.

4.1.2 Strengthening Bridge Team Coordination and Watchkeeping Standards

HN-Company initiated several shipboard and fleet-wide initiatives to improve bridge team coordination and reduce the risk of ineffective lookout:

- A fleet-wide Extraordinary Safety Meeting was convened covering bridge team composition, avoidance of distractions, standing orders, rest hour management, and master-calling requirements.
- Officers were reminded that the OOW is not to carry out administrative tasks during navigation unless an effective lookout is maintained.

- A Tabletop Exercise programme was initiated to support discussion among bridge teams on appropriate response to developing navigational situations in different operating conditions.

4.1.3 Controlling Use of Bridge Computers and End-User Activity

To reinforce the OOW's focus on watchkeeping and minimise distractions from non-operational computer use, HN-Company introduced an End-User Computing Policy:

- The use of bridge computers for non-navigational tasks during watch is prohibited.
- If operational work is required on a bridge computer, an additional officer must be present.
- Usage of bridge systems is now monitored remotely by the IT team, and deviations are escalated for internal review.

4.1.4 Enhancing Situational Awareness and Use of Navigational Equipment

HN-Company enhanced its BW Navigation Course to increase emphasis on the radar usage and early detection of developing targets. Key changes include:

- Simulator-based training to reinforce long-range radar scanning and timely target acquisition.
- Refresher guidance on taking clear and early actions in accordance with COLREGs Rule 8 (Action to avoid collision).

4.1.5 Culture and Leadership Interventions

To support behavioural change and strengthen leadership practices, the Company launched several cultural and organisational initiatives:

- Ambitious Leadership @SEA was introduced to strengthen command presence, decision-making, and accountability among senior shipboard personnel.
- Unannounced VDR audits are planned throughout 2025 to monitor

watchkeeping practices and BRM implementation.

- A Navigational Focus Group has been established to review lessons learned, update procedures, and promote continual improvement.
- Conferences, workshops, and safety campaigns continue to be held to embed the investigation's lessons across the fleet.

4.2 CI-Company[51] did not report any safety actions taken in relation to the occurrence.

[51] CI-Company informed the investigation team that it had conducted an internal review of the occurrence and noted that CI was at anchor at the time. The Company indicated that, based on this review, it did not deem necessary to implement any safety actions in relation to the occurrence.

5 SAFETY RECOMMENDATIONS

A safety recommendation is for the purpose of preventive action and shall in no case create a presumption of blame or liability.

5.1 For HN-Company

5.1.1 To ensure that CPA/TCPA alarms remain active throughout navigational watches and that alarm settings are systematically reviewed and confirmed during passage planning and watch handovers, to support the timely identification of developing close-quarters situations**.**
[TSIB Recommendation RM-2025-014].

5.1.2 To reinforce adherence to the bridge manning levels prescribed in the Company's SMS during departure and other high-risk navigational phases, and to ensure that any justified deviation from the prescribed manning level is documented by the Master in accordance with the SMS.
[TSIB Recommendation RM-2025-015].

5.2 For CI-Company

5.2.1 To provide clear guidance in its SMS procedures on the use of available communication tools, such as sound signals, light signals, and VHF radio, when responding to developing or time-critical close-quarters situations.
[TSIB Recommendation RM-2025-016].